

PATENT COOPERATION TREATY
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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P18584PC00TV	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/NO2004/000370	International filing date (<i>day/month/year</i>) 01.12.2004	Priority date (<i>day/month/year</i>) 01.12.2003
International Patent Classification (IPC) or national classification and IPC B65G45/16		
<p>Applicant AS TECHNO TRACK et al.</p> <p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of 6 sheets, as follows:</p> <ul style="list-style-type: none"> <input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. <p>b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> <p>4. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Box No. I Basis of the opinion <input type="checkbox"/> Box No. II Priority <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability <input type="checkbox"/> Box No. IV Lack of unity of invention <input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement <input type="checkbox"/> Box No. VI Certain documents cited <input type="checkbox"/> Box No. VII Certain defects in the international application <input type="checkbox"/> Box No. VIII Certain observations on the international application 		
Date of submission of the demand 30.09.2005	Date of completion of this report 01.03.2006	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Lawder, M Telephone No. +49 89 2399-8465	



INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/NO2004/000370

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
 - This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
 - international search (under Rules 12.3 and 23.1(b))
 - publication of the international application (under Rule 12.4)
 - international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

Description, Pages

1-6 as published

Claims, Numbers

1-45 filed with telefax on 13.02.2006

Drawings, Sheets

1/6-6/6 as published

- a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

- The amendments have resulted in the cancellation of:
 - the description, pages
 - the claims, Nos.
 - the drawings, sheets/figs
 - the sequence listing (*specify*):
 - any table(s) related to sequence listing (*specify*):
- This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
 - the description, pages
 - the claims, Nos.
 - the drawings, sheets/figs
 - the sequence listing (*specify*):
 - any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
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International application No.
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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-45
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-45
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-45
	No:	Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

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Item V:

1. Document D1 (EP-A-0 338 118) discloses a cleaning device for a conveyor belt 1 for installation essentially transverse to the longitudinal direction of the conveyor belt, which cleaning device comprises a supporting structure 15 adapted to hold a scraping device in place across the conveyor belt, the scraping device covering essentially the whole width of the conveyor belt and consisting of a plurality of individual scraping segments each of which consists of a body 42 with a scraping face 17, which scraping face 17 rests against the conveyor belt 1, where the scraping device comprises a number of segments and the scraping face 17 on each of the segments is elastically connected to the supporting structure 15 and all the segments are covered by a flexible material 14.

Although the features of the characterising portion of claim 1 are not entirely clear (see Item VIII, below), the features have been understood to mean the following:

The subject-matter of claim 1 differs from the belt cleaner known from D1 in that the scraping device is mounted in a holder where at least an area of the scraping device is fixedly connected to the holder with a fixed connection and that one or more adjusting devices located on the underside and/or the upper side of the scraping device allow the scraping device to be given a curved form so that it is adapted to the curved form of the drum and the belt (second embodiment originally disclosed in the description, page 5, lines 28-31 and figures 6 and 7).

Although D2 (US-A-5 213 197) discloses that the total pressure of the scraper against the belt can be increased, there is no indication in the available prior art to adapt the curved form of the scraper by the use of adjusting devices so as to adapt the scraper to fit the drum and belt.

The subject-matter of claim 1 is therefore new and inventive within the meaning of Article 33(2) and (3) PCT.

2. By the same argument as above, the respective unitary subject-matter of claims 16 and 31 is also considered to be novel and inventive.

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3. Claims 2-15 are dependent on claim 1, claims 17-30 are dependent on claim 16 and claims 32-45 are dependent on claim 31 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

Item VIII

4. It is not clear from the wording of claim 1 how a fixed connection allows the scraping device to be bent (Article 6 PCT).

AMENDED PATENT CLAIMS 12.FEB. 2006

1. A scraping device for a conveyor belt (2) for installation essentially transverse to the longitudinal direction of the conveyor belt (2), which scraping device comprises a supporting structure (3) adapted to hold the scraping device in place across the conveyor belt (2), which scraping device is covering essentially the whole width of the conveyor belt (2) and consisting of a plurality of individual scraping segments (1') each of which consists of a body (7) with a scraping face (4); which scraping face (4) rests against the conveyor belt (2) where the scraping device comprises a number of segments (1') and that the scraping face (4) on each of the segments (1') is elastically connected to the supporting structure (3) and all the segments are covered by a flexible material,
 5 characterised in that the scraping device is mounted in a holder (12) where at least an area of the scraping device is fixedly connected to the holder (12) with a fixed connection (17) so that the scraping device can be bent in that there is
 10 provided one or more adjusting devices (14, 15, 16) at the underside and/or the upper side of the scraping device which push different parts of the scraping device against the conveyor belt (2).

2. A scraping device according to claim 1,
 20 characterised in that the scraping face is directed towards the conveyor belt.

3. A scraping device according to claims 1-2,
 characterised in that the scraping device is provided with one or more adjusting devices for adapting the scraping device to the curve of the drum over
 25 which the conveyor belt runs.

4. A scraping device according to claims 1-3,
 characterised in that the scraping face (4) is reinforced in the connection between the supporting structure (3) and the scraping face (4).

5. A scraping device according to claims 1-4,
 30 characterised in that the scraping face (4) on each segment is connected to the supporting structure (3) by a resilient metal spring having a spring constant (k1).

6. A scraping device according to claims 1-5,
 characterised in that the scraping face (4) on each segment is
 35 connected to the supporting structure (3) by a fibre-reinforced elastic material having spring constant (k1).

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7. A scraping device according to claims 1-6,
characterised in that the spring constant (k) is selected so that the
scraper blades have an almost ideal angle of substantially 90 degrees to the
conveyor belt that is to be cleaned.

5 8. A scraping device according to claims 1-7,
characterised in that two or more of the segments (1') are connected
transverse to the scraping device to a reinforcing element having a spring constant
(k_2).

9. A scraping device according to claims 1-8,
10 characterised in that the whole of or parts of the body (7) of the
scraper segments (1) are formed of an elastic material so that it forms the elastic
attachment for the scraping face.

10. A scraping device according to claims 1-9,
characterised in that the number of segments (1') is greater than five.

15 11. A scraping device according to claims 1-9,
characterised in that the number of segments (1') is greater than
eight.

12. A scraping device according to claims 1-9,
characterised in that the number of segments (1') is greater than
20 twelve.

13. A scraping device according to one or more of claims 1-12,
characterised in that two or more of the segments (1') have different
widths.

25 14. A scraping device according to claims 1-13,
characterised in that the flexible material covering the scraper
segments (1') is also an elastic material.

15. A scraping device according to claims 1-14,
characterised in that the scraping face (4) is formed of or with a
30 reinforcing material.

16. A scraping device for a conveyor belt (2) for installation essentially
transverse to the longitudinal direction of the conveyor belt (2), which scraping
device comprises a supporting structure (3) adapted to hold the scraping device in
place across the conveyor belt (2), which scraping device is covering essentially
35 the whole width of the conveyor belt (2) and consisting of a plurality of individual

scraping segments (1') each of which consists of a body (7) with a scraping face (4), which scraping face (4) rests against the conveyor belt (2) where the scraping device comprises a number of segments (1') and that the scraping face (4) on each of the segments (1') is elastically connected to the supporting structure (3) and all the segments are covered by a flexible material,
5 characterised in that the scraping device is mounted in a holder (10, 12) where at least a part of the scraping device can be bent towards or away from the conveyor belt in that there is provided one or more adjusting devices (11, 13) at one of and/or both of the long sides of the scraping device which push different parts of the scraping device towards or away from the conveyor belt (2).

10 17. A scraping device according to claim 16,
characterised in that the scraping face is directed towards the conveyor belt.
18. A scraping device according to claims 16-17,
15 characterised in that the scraping device is provided with one or more adjusting devices for adapting the scraping device to the curve of the drum over which the conveyor belt runs.

19. A scraping device according to claims 16-18,
20 characterised in that the scraping face (4) is reinforced in the connection between the supporting structure (3) and the scraping face (4).

25 20. A scraping device according to claims 16-19,
characterised in that the scraping face (4) on each segment is connected to the supporting structure (3) by a resilient metal spring having a spring constant (k_1).

21. A scraping device according to claims 16-20,
25 characterised in that the scraping face (4) on each segment is connected to the supporting structure (3) by a fibre-reinforced elastic material having spring constant (k_1).

22. A scraping device according to claims 16-21,
30 characterised in that the spring constant (k) is selected so that the scraper blades have an almost ideal angle of substantially 90 degrees to the conveyor belt that is to be cleaned.

23. A scraping device according to claims 16-22,
35 characterised in that two or more of the segments (1') are connected transverse to the scraping device to a reinforcing element having a spring constant (k_2).

24. A scraping device according to claims 16-23,
characterised in that the whole of or parts of the body (7) of the
scraper segments (1) are formed of an elastic material so that it forms the elastic
attachment for the scraping face.

5 25. A scraping device according to claims 16-24,
characterised in that the number of segments (1') is greater than five.

26. A scraping device according to claims 16-24,
characterised in that the number of segments (1') is greater than
eight.

10 27. A scraping device according to claims 16-24,
characterised in that the number of segments (1') is greater than
twelve.

28. A scraping device according to one or more of claims 16-27,
characterised in that two or more of the segments (1') have different
15 widths.

29. A scraping device according to claims 16-28,
characterised in that the flexible material covering the scraper
segments (1') is also an elastic material.

20 30. A scraping device according to claims 16-29,
characterised in that the scraping face (4) is formed of or with a
reinforcing material.

31. A scraping device for a conveyor belt (2) for installation essentially
25 transverse to the longitudinal direction of the conveyor belt (2), which scraping
device comprises a supporting structure (3) adapted to hold the scraping device in
place across the conveyor belt (2), which scraping device is covering essentially
the whole width of the conveyor belt (2) and consisting of a plurality of individual
scraper segments (1') each of which consists of a body (7) with a scraping face
30 (4), which scraping face (4) rests against the conveyor belt (2) where the scraping
device comprises a number of segments (1') and that the scraping face (4) on each
of the segments (1') is elastically connected to the supporting structure (3) and all
the segments are covered by a flexible material,
characterised in that the scraping device is mounted in a holder (12)
35 where at least an area of the scraping device is fixedly connected to the holder (12)
with a fixed connection (17) so that the scraping device can be bent in that there is
provided one or more adjusting devices (14, 15, 16) at the underside and/or the
upper side of the scraping device which push different parts of the scraping device

against the conveyor belt (2) and that at least a part of the scraping device can be bent towards or away from the conveyor belt in that there is provided one or more adjusting devices (11, 13) at one of and/or both of the long sides of the scraping device which push different parts of the scraping device towards or away from the conveyor belt (2).

10 32. A scraping device according to claim 31,
 characterised in that the scraping face is directed towards the conveyor belt.

15 33. A scraping device according to claims 31-32,
 characterised in that the scraping device is provided with one or more adjusting devices for adapting the scraping device to the curve of the drum over which the conveyor belt runs.

20 34. A scraping device according to claims 31-33,
 characterised in that the scraping face (4) is reinforced in the connection between the supporting structure (3) and the scraping face (4).

25 35. A scraping device according to claims 31-34,
 characterised in that the scraping face (4) on each segment is connected to the supporting structure (3) by a resilient metal spring having a spring constant (k1).

30 36. A scraping device according to claims 31-35,
 characterised in that the scraping face (4) on each segment is connected to the supporting structure (3) by a fibre-reinforced elastic material having spring constant (k1).

35 37. A scraping device according to claims 31-36,
 characterised in that the spring constant (k) is selected so that the scraper blades have an almost ideal angle of substantially 90 degrees to the conveyor belt that is to be cleaned.

40 38. A scraping device according to claims 31-37,
 characterised in that two or more of the segments (1') are connected transverse to the scraping device to a reinforcing element having a spring constant (k2).

45 39. A scraping device according to claims 31-38,
 characterised in that the whole of or parts of the body (7) of the scraper segments (1) are formed of an elastic material so that it forms the elastic attachment for the scraping face.

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40. A scraping device according to claims 31-39,
characterised in that the number of segments (1') is greater than five.

41. A scraping device according to claims 31-39,
characterised in that the number of segments (1') is greater than
5 eight.

42. A scraping device according to claims 31-39,
characterised in that the number of segments (1') is greater than
twelve.

43. A scraping device according to one or more of claims 31-42,
10 characterised in that two or more of the segments (1') have different
widths.

44. A scraping device according to claims 31-43,
characterised in that the flexible material covering the scraper
15 segments (1') is also an elastic material.

45. A scraping device according to claims 31-44,
characterised in that the scraping face (4) is formed of or with a
reinforcing material.

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